Instruction session lesson plan
CHEM 105-6: Writing about Science, Writing Science.
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Grade Level: freshman seminar

Duration: One 50-min session

Description: Instruction session for a freshman seminar taught by a chemistry faculty. The session will be delivered at Ryan Hall. There are no computers in the room. Students have to write a scientific paper as their final assignment. From previous years, it seems that in many cases they use news articles as sources instead of scholarly materials.

Learning Outcomes.
By the end of the session, students will be able to:

• Differentiate between and scholarly article and a non scholarly source
• Identify sources to search for books and scholarly articles
• Construct and effective keyword search using Boolean operators

Assessment

• In-class assessment: 2 poll questions after the class
  1) You are researching the use of SERS for analysis of pigments in works of art. Your keyword search might look like:
     A. SERS AND pigments AND “works of art”
     B. SERS OR pigments OR “works of art”
     C. SERS AND (pigments OR “works of art”)
     D. None of the above

  2) Which of the following would be a good place to look for scholarly articles?
     A. Web of Science
     B. NUcat, the library catalog
     C. The New York Times
     D. None of the above

• Completing a self-assessment after the class is finished (what they have and have not learned). Questions:
  o What was the most important thing you learned today?
  o What was the most confusing topic today?
  o What would you change?

Content Outline
1. Introduce myself:
   • What I do.
   • How to contact me

2. Why am I here?
• Learn how to evaluate information sources when writing science: what to search for, where to look, how to search

3. What to search for when writing like a scientist?
   • How do scientists communicate?
     - Poll to ask what they think.
     Question: How do scientists usually communicate their results to the scientific community?
       A. Facebook
       B. Talk to a reporter, who writes the story in a newspaper
       C. Article published in a scholarly journal
       D. Article published in a popular science magazine (e.g. Scientific American, New Scientist)
     - The scholarly article: first scientific journal, and examples of amazing discoveries published in articles (Einstein’s “On the electrodynamics of moving bodies”, Watson and Crick’s double helix, PageRank algorithm).
     - Peer review – why it is important
   • Do scientists use news articles as sources?
     - Distribute and discuss briefly the NPR news report on the study of the effects of sedentary behavior by a NU faculty member
     - Poll. Question: If you were writing a scientific paper on the effects of sedentary behavior, would you use it as a source?
       A. Yes
       B. No
     - Discuss the difference between the news report and a scientific article.
   • Other sources. Mention books (good for background information), and conference proceedings. Explain why review articles can be useful (state of the art, latest discoveries, scientists working in the topic).
   • Websites. Many US federal agencies websites are good sources of scientific information: TOXNET, EPA, USGS, etc. However, in general, be cautious and evaluate: author, domain, currency, accuracy, objectivity.

4. Where to look and how to search
   • The library website.
   • Recommended resources by subject. Point out the guide created for this class.
4.1. Finding Articles
   • The library has access to over 700 databases. I have included a couple in the guide that may be useful for the assignment. (Another option: recommended resources by subject).
   • Web of Science:
     - Multidisciplinary, very good for scientific information
     - Particularly good because it tracks citation information (explain).
     - Explain boolean search. Search example: use of contact lenses for drug delivery
       1) identify keywords: contact lenses, drug, delivery
       2) combine keywords with operators. If no operator is used, WoS assumes one is using AND. Thus, if one enters:
contact lenses AND drug AND delivery
WoS thinks we have entered contact AND lenses AND drug AND delivery. To avoid that, use quotation marks “contact lenses” AND drug AND delivery
3) use synonyms! Link the using OR: “contact lenses” AND drug AND (delivery OR release)
4) Wildcard: “contact lenses” vs “contact lens*”
- Once the search has been performed, explain a record. Read the title and quickly the abstract to determine if it may be useful.
- Refine by document type to find Reviews
- Point to the citations
- Explain ILL
4.2. Finding Books
• How to find NUCAT
• Unknown item searching: use the same query mentioned before.
  - point to subject headings
• ILL
4.3. One search tool.
• Describe its strengths and limitations.